

# PATENT ABSTRACTS OF JAPAN

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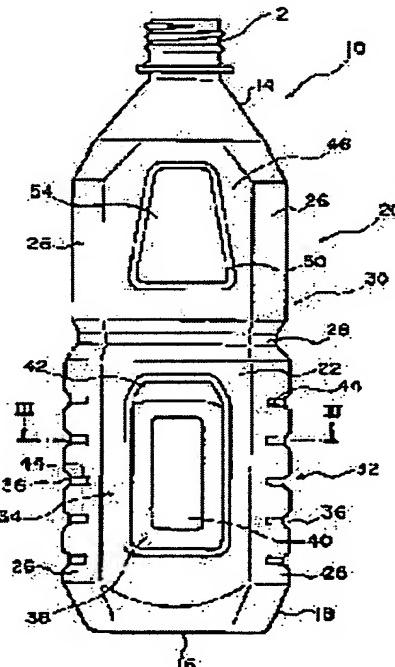
## (54) BIAXIALLY STRETCHING BLOW MOLDED CONTAINER

### (57)Abstract:

**PURPOSE:** To prevent wall faces from expanding at the time of filling of contents on heating and prevent wall faces other than decompression panels from denting and deforming at the time of volume reduction and decompression.

**CONSTITUTION:** A container has a rectangular cross section and chamfers 26 at intersections of wide wall parts 22 and narrow wall parts 24. A decompression deformation part 34 is provided at a lower side of nearly the central part in the vertical direction of the wide wall part 22. Ranging over the narrow wall part and the chamfers 26 at its both sides, ribs 36 are formed being dented. The depth of the rib at the central area in the longitudinal direction of the rib 36

is set to be shallower than the depth of the ribs at its both end areas. Thus, when a decompression deformation force exceeding a fixed pressure reducing value is added to the decompression deformation part 34, the part of the ribs 36 in the narrow wall part 24 is deformed with decompression, so that deformation of the outer surface of the wide wall part 22 can be prevented.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1]In a biaxial-stretching-blow-molding container which provided a decompression deformed portion at the time of reduction decompression in said broad height direction approximately central position bottom of a wall among walls which have a chamfer in an intersection of a broad wall and a narrow wall, and were fabricated by cross section abbreviation square shape, A biaxial-stretching-blow-molding container, wherein it has the rib hollowed over said narrow wall and a chamfer of the neighbors and the rib depth of a longitudinal direction center region of said rib is made shallower than the rib depth of the both-ends field.

[Claim 2]A biaxial-stretching-blow-molding container, wherein a rib of said both-ends field is extended by narrow wall from a chamfer in claim 1.

[Claim 3]Inside of a wall which has a chamfer in an intersection of a broad wall and a narrow wall, and was fabricated by cross section abbreviation square shape, In a biaxial-stretching-blow-molding container which provided a decompression deformed portion which has a crevice which carries out decompression modification at the time of reduction decompression in said broad height direction approximately central position bottom of a wall, A biaxial-stretching-blow-molding container which has the rib hollowed over said narrow wall and a chamfer of the neighbors, and is characterized by the rib depth of a longitudinal direction center region being shallower than the depth of a crevice of said decompression deformed portion at least, and carrying out said rib.

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]**

[Industrial Application]Especially this invention relates to the wall surface structure of a biaxial-stretching-blow-molding container about a biaxial-stretching-blow-molding container.

**[0002]**

[Description of the Prior Art]As everyone knows, the container (henceforth a bottle) by which biaxial stretching blow molding was carried out using polyethylene terephthalate (PET) has many advantages in gas barrier property-proof, transparency, tough nature, a sanitary aspect, etc.

[0003]By the way, one of the bottles obtained by biaxial stretching blow molding has some which are called a heat-resistant bottle. This heat-resistant bottle is a bottle which can be filled up with contents, such as juice made into the elevated temperature for sterilization.

[0004]However, in such a bottle, when the contents by which high temperature filling was carried out get cold, an inside may serve as a decompressed atmosphere by reduction of contents, and a bottle wall part may carry out decompression modification. The modification by such reduction decompression will cause change of the appearance shape of the whole bottle, and will spoil the commodity value of a bottle.

[0005]Then, modification according to reduction decompression in a part of wall is made to perform as a measure when such reduction decompression occurs, and the structure of preventing modification of the appearance shape of the whole bottle is adopted.

[0006]This structure is called a decompression panel and the structure which established two or more crevices hollow towards the method of the inside of a bottle in the wall surface of the bottle is usually used. Thereby, when reduction decompression occurs, the shape change in other portions of a bottle can be prevented by carrying out decompression modification only of the crevice.

[0007]On the other hand, there are some which have rectangular sectional shape as an example in the bottle obtained by the above-mentioned biaxial stretching blow molding on a

design. The section in this case says the section of the lengthwise direction of a bottle, and a right-angled direction.

[0008]And providing a decompression panel also to the bottle of such a rectangular section is performed, and when it is a square cross section, the decompression panel is formed in the wall surface of the long side which is easy to carry out flexure deformation to all the wall surface of four sides again in the case of a rectangular section, respectively.

[0009]Generally this decompression panel is formed in two upper and lower sides in the wall of a bottle.

[0010]There is also a thing which a chamfer is formed in the position which each neighborhood intersects, and each neighborhood was made to follow in this kind of bottle. It is a reason to secure the intensity of the position which each neighborhood which makes a bottle corner, i.e., a wall surface, intersects as a reason for forming this chamfer. Therefore, let sectional shape of such a bottle be an octagon.

[0011]

[Problem(s) to be Solved by the Invention]However, in the case of a square cross section, among the above-mentioned containers. almost -- the decompression modification at the time of reduction decompression -- the wall surface of each neighborhood -- abbreviated -- since it is carried out uniformly, there is little change of appearance shape, but when it is a bottle with which the neighboring length is different like a rectangular section especially, the wall surface of a short side may bulge and appearance shape may change.

[0012]That is, it is easy to carry out swell deformation to fluid pressure according to heat modification of a wall, and at the time of subsequent cooling, a wall is cratered to the method of the inside of a bottle, and is easy to change into it with decompression at the time of elevated-temperature contents restoration. In this case, since a broad wall tends to crater, a decompression deformed portion changes, but a top wall is cratered very much and cannot change easily. Therefore, when swell deformation is carried out, a state as it is will be maintained.

[0013]Then, when forming the transverse rib in the top wall, the swell deformation at the time of heat restoration was prevented. However, in this top wall, since it cannot count upon decompression modification at all, the role of other walls and the broad wall especially formed caudad becomes large.

[0014]By the way, the external force by the case where heat fill temperature is set up more highly than a schedule, the shock under conveyance, etc., Or when modification by the pressure at the time of grasping by consumers started a broad wall with many this burden, fields other than the decompression deformed portion of a broad wall changed, and there was a problem of stopping being able to carry out self-reset.

[0015]Especially the modification at the time of reduction decompression of the wall surface located between such decompression panels was seen near the upper part of a lower decompression panel in many cases.

[0016]This invention was made paying attention to the above-mentioned problem, the

purpose prevents a wall surface from bulging at the time of heating restoration of contents, etc., and there are wall surfaces other than a decompression panel in providing the biaxial-stretching-blow-molding container which can prevent denting and carrying out shape distortion at the time of reduction decompression.

[0017]

[Means for Solving the Problem]In order to attain said purpose, the 1st invention has a chamfer in an intersection of a broad wall and a narrow wall, In a biaxial-stretching-blow-molding container which provided a decompression deformed portion at the time of reduction decompression in said broad height direction approximately central position bottom of a wall among walls fabricated by cross section abbreviation square shape, It has the rib hollowed over said narrow wall and a chamfer of the neighbors, and the rib depth of a longitudinal direction center region of said rib is characterized by being made shallower than the rib depth of the both-ends field.

[0018]The 2nd invention is characterized by a rib of said both-ends field being extended by narrow wall from a chamfer in the 1st invention.

[0019]The 3rd invention has a chamfer in an intersection of a broad wall and a narrow wall, In a biaxial-stretching-blow-molding container which provided a decompression deformed portion which has a crevice which carries out decompression modification at the time of reduction decompression in said broad height direction approximately central position bottom of a wall among walls fabricated by cross section abbreviation square shape, It has the rib hollowed over said narrow wall and a chamfer of the neighbors, and is characterized by the rib depth of a longitudinal direction center region being shallower than the depth of a crevice of said decompression deformed portion at least, and carrying out said rib.

[0020]

[Function]Since it is in the state where the narrow wall was reinforced by the rib hollowed over said narrow wall and the chamfer of the neighbors at the time of heating restoration of contents if it is in the invention of the 1st of said composition, Even if the pressure added from the weight and the wall which changed of contents, heat modification, etc. are added, the swell deformation by the side of the narrow wall lower part will be prevented.

[0021]When the pressure more than a fixed decompression value is added in a narrow wall by making the rib depth of the longitudinal direction center region of a rib especially shallower than the rib depth of both ends, it becomes possible to absorb the pressure according to modification of a rib.

[0022]Therefore, modification by the decompression deforming force of a wall is stopped in a decompression deformed portion, and commodity value is spoiled.

[0023]If it is in the 2nd invention, when the rib of the both-ends field which compares with the rib of a center region and is deep is extended by the narrow wall from a chamfer, The side part of a wall with a narrow rib of this both-ends field will be reinforced, and the narrow whole wall can be certainly prevented from the pressure added from the weight and the wall which changed of contents, and carrying out swell deformation, even if heat modification

etc. are added further.

[0024]Decompression modification only of the rib parts in a narrow wall can be carried out without making a chamfer produce modification, even if it is a case where decompression deforming force is added to a decompression deformed portion exceeding a fixed decompression value at the time of reduction decompression of contents.

[0025]Therefore, he stops modification by the internal pressure and decompression of a wall in a narrow wall, and is trying not to spoil commodity value.

[0026]If it is in the 3rd invention, the narrow whole wall can be certainly prevented from the pressure added from the weight and the wall which changed of contents, and carrying out swell deformation, even if heat modification etc. are added further like the invention of the 1st invention by the rib hollowed over the narrow wall and the chamfer of the neighbors.

[0027]Since the rib depth of the longitudinal direction center area is made shallower than the depth of the crevice of a decompression deformed portion even if it is a case where decompression deforming force is added to a decompression deformed portion exceeding a fixed decompression value at the time of reduction decompression of contents, the rib of a center region can change and decompression can be absorbed.

[0028]

[Example]Hereafter, the suitable example of this invention is described in detail with reference to drawings.

[0029]Drawing 1 - drawing 3 are the sectional views of the biaxial-stretching-blow-molding container (henceforth a bottle) concerning one example of this invention.

[0030]The bottle 10 shown in this example, for example using polyethylene terephthalate (PET) by biaxial stretching blow molding. The lip part 12 containing the opening by the side of an upper bed, the shoulder 14 which stands in a row caudad from this lip part 12, the pars basilaris ossis occipitalis 16 by the side of a lower end, the heel section 18 which stands in a row in the upper part from this pars basilaris ossis occipitalis 16, and the drum section 20 formed between this heel section 18 and shoulder 14 were being fabricated by one.

[0031]The drum section 20 is formed in the cross section abbreviation square shape which has the broad wall 22 and the narrow wall 24 of the couple arranged in the opposed position, respectively. this drum section 20 -- each -- the chamfer 26 is formed in the broad wall 22 and the intersection of wall 24 narrow comrades over the height direction. This chamfer 26 is formed more narrow than the narrow wall 24, and reinforces the intersection of the broad wall 22 and the narrow wall 24. Namely, since the drum section 20 is more narrow than the wall 24 with the chamfer 26 narrow moreover in which the chamfer 26 is arranged at each intersection of the broad wall 22 and the narrow wall 24, Four intersections of each walls 22 and 24 are in the state where it was reinforced by the chamfer 26 whose intensity is higher than each walls 22 and 24.

[0032]The slot 28 which becomes depressed in an inner direction is formed in an upper position rather than the height direction middle position of the drum section 20. This slot 28

is formed over the broad wall 22, the narrow wall 24, and the chamfer 26 succeeding a hoop direction.

The drum section 20 is classified into the upper trunk portion 30 and the lower trunk portion 32 bordering on this slot 28.

Thus, the slot 28 performs reinforcement to the lateral pressure of the drum section 20 in a position by being formed in a position in the middle of the sliding direction of the drum section 20, middle [ in drum section 20 sliding direction ], and. The buckling distortion of the drum section 20 is prevented by classifying the drum section 20 into a small unit in the sliding direction of the upper trunk portion 30 and the lower trunk portion 32.

[0033]To the lower trunk portion 32 received greatly, the fluid pressure from the contents with which it filled up. the broad wall 22 -- the time of reduction decompression of contents - - decompression -- the deformable decompression deformed portion 34 is formed, and the rib 36 which prevents the swelling to the outside at the time of heating restoration of contents and broad wall 22 grasping is formed in the narrow wall 24.

[0034]The decompression deformed portion 34 is formed in approximately rectangular form longwise to lower trunk portion 32 center portion of the broad wall 22.

The outside surface excluding the decompression deformed portion 34 of said wall 22 to the circumference in this decompression deformed portion 34. It is formed after the crevice 38 which becomes depressed toward an inner direction from (the general surface is called hereafter) has continued annularly, and it is formed after the flat-surface part 40 located in the method twist of the inside of some rather than the general surface of said wall 22 has followed the center portion surrounded by this crevice 38 from the crevice 38.

And the flat-surface part 40 can carry out decompression modification now by using the periphery edge portion of the crevice 38 as hinged support in an inner direction at the time of reduction decompression of contents.

[0035]The reinforcing groove 42 covering a transverse direction is formed in the upper position in the decompression deformed portion 34. It is what this reinforcing groove 42 is formed in the state where it became depressed towards the inner direction more deeply than the crevice 38 formed in the circumference of the decompression deformed portion 34, and functions as a reinforcing rib, He reinforces the decompression deformed portion 34 upper part, and is trying to prevent the general surface of the wall 22 which stands in a row in the upper part of the decompression deformed portion 34 from changing in connection with decompression modification of the decompression deformed portion 34. The reinforcing groove 42 is formed in the state where it installed to the position in the decompression deformed portion 34 in the middle of the wall 22 which stands in a row on it from the crevice 38 upper-bed position of the decompression deformed portion 34.

He is trying for the interval of the wall surface between this reinforcing groove 42 and slot 28 to become narrow.

therefore, it will be in the state where the reinforcing rib was formed between the reinforcing groove 42 and the slot 28, the rib effect becomes high, and it becomes possible to prevent

certainly about the general surface of the wall 22 which stands in a row in the upper part of the decompression deformed portion 34 changing in connection with decompression modification of the decompression deformed portion 34 further. The reinforcement step 45 is formed in the rising portion 43 between the pars basilaris ossis occipitalis of the reinforcing groove 42, and the general surface of the upper position of the decompression deformed portion 34, and he reinforces the rising portion 43, and is trying for crevice 38 upper bed to serve as hinged support certainly.

[0036]The rib 36 is formed in the height direction of the narrow wall 24 over two or more (in this example, it is five), and the crosswise whole region with the prescribed interval. He is trying to prevent bulge of the wall 24 at the time of heating restoration of contents, and grasping of the broad wall 22 by reinforcing the narrow wall 24 by this rib 36.

[0037]The extension 44 extended over the neighboring chamfers 26 exceeding the corner which the narrow wall 24 and the chamfer 26 intersect is formed in the both ends of each rib 36.

Thus, by making the rib 36 extend to the neighboring chamfers 26, the chamfer 26 whose flexural strength it is more narrow than the narrow wall 24, and is high can be made to support the both-ends portion of the rib 36, and bulge of the wall 24 can be further prevented now certainly.

[0038]The depth D2 of the rib 36 of the longitudinal direction center region in the wall 24 with each narrow rib 36, It is formed more shallowly than the depth D1 of the extension 44 formed in the both-ends field, When the decompression deforming force more than a fixed decompression value is added to the decompression deformed portion 34, rib 36 portion in the narrow wall 24 whose depth is shallower than the extension 44 enables it to carry out decompression modification, He is trying to prevent decompression modification of the general surface of the wall 22 which stands in a row in the upper part of the decompression deformed portion 34 established in the broad wall 22.

[0039]The depth D2 of rib 36 portion in the narrow wall 24, It is formed more shallowly than the depth D3 of the crevice 38 in the decompression deformed portion 34 provided in the broad wall 22, When the decompression deforming force more than a fixed decompression value is added to the decompression deformed portion 34, rib 36 portion in the narrow wall 24 whose depth is shallower than the crevice 38 enables it to carry out decompression modification easily, He is trying to prevent decompression modification of the general surface of the wall 22 which stands in a row in the upper part of the decompression deformed portion 34 established in the broad wall 22.

[0040]The decompression deformed portions 46 and 48 which can carry out decompression modification at the time of reduction decompression of contents, respectively are formed in the broad wall 22 and the narrow wall 24 of the upper trunk portion 30. In the broad wall 22, the decompression deformed portion 46 is formed greatly,

and the decompression deformed portion 48 is formed comparatively small in the narrow wall 24. Since area is small compared with the lower trunk portion 32 and the intensity of the broad wall 22 and the narrow wall 24 is also high in the upper trunk portion 30, The decompression deformed portions 46 and 48 comprise only the crevices 50 and 52 and the flat-surface parts 54 and 56, a reinforcing groove is not provided, and, moreover, the rib is not provided in the narrow wall 24.

[0041]Even if they require fluid pressure for the drum section 20 and are the drum section 20 and a case where the pressure of the bulge direction is applied especially to the lower trunk portion 32 when carrying out heating restoration of the contents since this examples are the above composition, Since the narrow wall 24 of the lower trunk portion 32 is reinforced by the rib 36, it is prevented that it will be in a swollen condition. Since especially the rib 36 is in the state where both ends were extended and supported to the chamfer 26 with high intensity, bulge of the wall 24 will be prevented certainly.

[0042]Even if it is a case where the broad wall 22 of the drum section 20 was grasped, and internal pressure becomes high, bulge of the narrow wall 24 will be certainly prevented by existence of said rib 36.

[0043]Even if it is a case where the contents by which heating restoration was carried out carry out reduction decompression, the decompression deformed portion 34 provided in the decompression deformed portions 46 and 48 of the upper trunk portion 30 and the broad wall 22 of the lower trunk portion 32 will carry out decompression modification, and will correspond to reduction decompression of contents.

[0044]In this case, it follows on decompression modification of the decompression deformed portion 34 in the lower trunk portion 32 at the time of decompression, Although the general surface of the wall 22 connected with the upper part of the decompression deformed portion 34 tends to cause modification, The depth D2 of the rib 36 in the narrow wall 24 is formed more shallowly than the depth D1 of the extension 44 formed in both ends, And since the depth D2 of rib 36 portion in the narrow wall 24 is formed more shallowly than the depth D3 of the crevice 38 in the decompression deformed portion 34 provided in the broad wall 22, When the decompression deforming force more than a fixed decompression value is added to the decompression deformed portion 34, rib 36 portion in the narrow wall 24 will carry out decompression modification certainly, and decompression modification of the general surface of the wall 22 which stands in a row in the upper part of the decompression deformed portion 34 established in the broad wall 22 will be prevented.

[0045]Modification of said general surface will be more certainly prevented by reinforcement of the reinforcing groove 42 established in the upper part in the decompression deformed portion 34. By being hollowed by the inner direction more deeply than the crevice 38 which the reinforcing groove 42 formed in the decompression deformed portion 34 especially, and being installed in the decompression deformed portion 34 upper part like the above-mentioned, In order to narrow the interval of the general surface of the wall 22 between the slot 28 and the reinforcing groove 34 which were formed in the drum

section 20 and to function as a reinforcing rib, modification of the general surface will be prevented more certainly.

[0046]This invention is not limited to said each example, and various modification implementation is possible for it within the limits of the gist of this invention.

[0047]For example, in said example, although the rib is not formed in an upper trunk portion, it is possible to form a rib in portions, such as a chamfer where a label etc. are stuck in an upper trunk portion in many cases and which does not have influence in pasting of this label.

[0048]In this example, the depth D2 of the rib 36 in the narrow wall 24 is formed more shallowly than the depth D1 of the extension 44 formed in both ends, And although the depth D2 of rib 36 portion in the narrow wall 24 is formed more shallowly than the depth D3 of the crevice 38 in the decompression deformed portion 34 provided in the broad wall 22, The relation of this depth can also be considered only as one relation of the relation between the rib parts in a narrow wall, and a crevice or an extension.

[0049]It is possible to also make the extension 44 extend with the depth of rib 36 portion in the narrow wall 24.

[0050]

[Effect of the Invention]Since it is in the state where the narrow wall was reinforced by the rib hollowed over said narrow wall and the chamfer of the neighbors at the time of heating restoration of contents if it is in the 1st invention as explained above, There are the pressure and the effect that the swell deformation by the side of the narrow wall lower part is prevented even if heat modification etc. are added further of being added from the weight and the wall which changed of contents.

[0051]When the pressure more than a fixed decompression value is added in a narrow wall by making the rib depth of the longitudinal direction center region of a rib especially shallower than the rib depth of both ends, it becomes possible to absorb the pressure according to modification of a rib.

[0052]Therefore, modification by the decompression deforming force of a wall is stopped in a decompression deformed portion, and it is effective in carrying out as [ spoil / commodity value ].

[0053]When the rib of the both-ends field which compares with the rib of a center region and is deep is extended by the narrow wall from a chamfer according to the 2nd invention, The side part of a wall with a narrow rib of this both-ends field will be reinforced, and there are a pressure added from the weight and the wall which changed of contents, and an effect that the narrow whole wall can be certainly prevented from carrying out swell deformation even if heat modification etc. are added further.

[0054]It is effective in the ability to carry out decompression modification only of the rib parts in a narrow wall, without making a chamfer produce modification, even if it is a case where decompression deforming force is added to a decompression deformed portion exceeding a fixed decompression value at the time of reduction decompression of contents.

[0055]Therefore, modification by the internal pressure and decompression of a wall is stopped in a narrow wall, and it is effective in carrying out as [ spoil / commodity value ].

[0056]According to the 3rd invention, like the invention of the 1st invention by the rib hollowed over the narrow wall and the chamfer of the neighbors. There are a pressure added from the weight and the wall which changed of contents, and an effect that the narrow whole wall can be certainly prevented from carrying out swell deformation even if heat modification etc. are added further.

[0057]Since the rib depth of the longitudinal direction center area is made shallower than the depth of the crevice of a decompression deformed portion even if it is a case where decompression deforming force is added to a decompression deformed portion exceeding a fixed decompression value at the time of reduction decompression of contents, it is effective in the ability for the rib of a center region to change and absorb decompression.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

[Drawing 1]It is the front view seen from the broad wall side of the biaxial-stretching-blown-molding container concerning one example of this invention.

[Drawing 2]It is the partial fracture front view seen from the narrow wall side of drawing 1.

[Drawing 3]It is a sectional view which meets the III -III line of drawing 1.

**[Description of Notations]**

- 10 Bottle
- 20 Drum section
- 22 A broad wall
- 24 A narrow wall
- 26 Chamfer
- 28 Slot
- 30 Upper trunk portion
- 32 Lower trunk portion
- 34 Decompression deformed portion
- 36 Rib
- 38 Crevice
- 42 Reinforcing groove
- 44 Extension

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**[Translation done.]**

**\* NOTICES \***

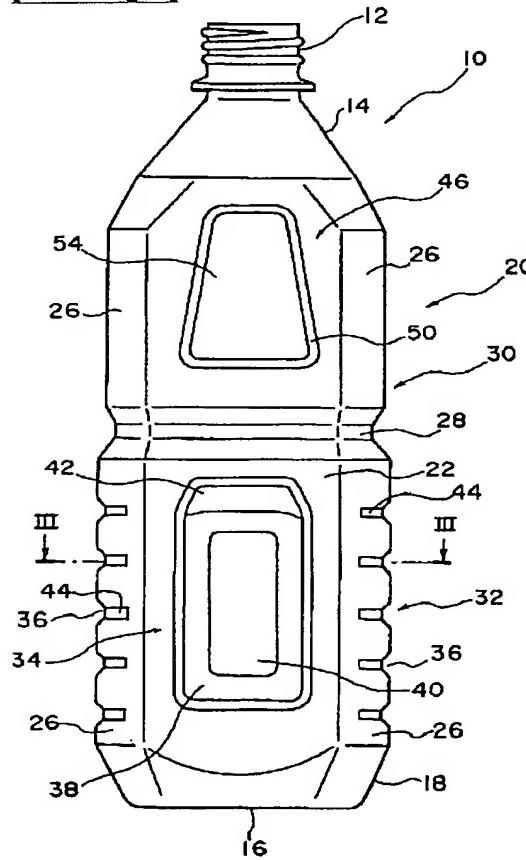
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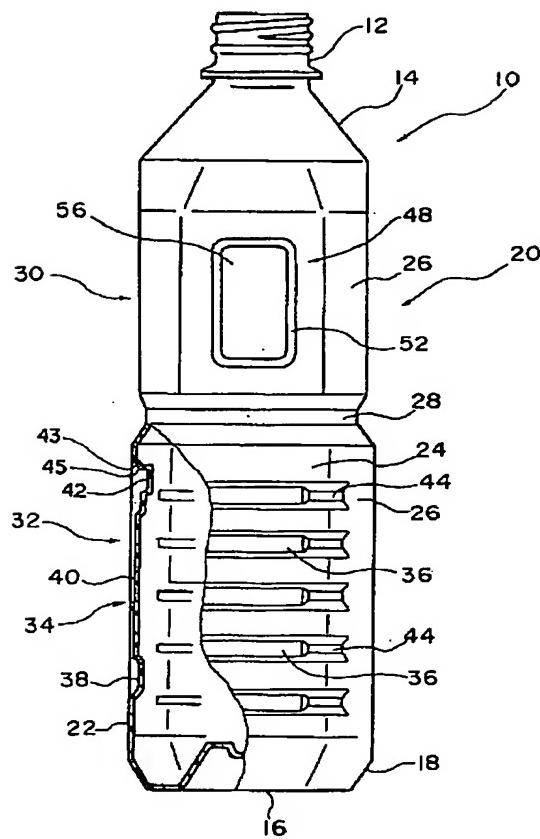
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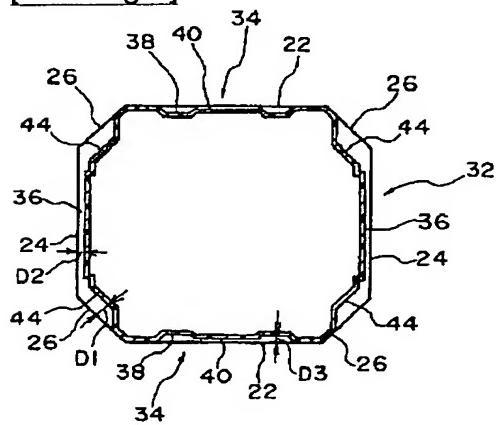
**DRAWINGS**

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**[Drawing 1]****[Drawing 2]**



[Drawing 3]



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CORRECTION OR AMENDMENT

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[Kind of official gazette] Printing of amendment by the regulation of 2 of Article 17 of Patent Law

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[A written amendment]

[Filing date] June 6, Heisei 13 (2001.6.6)

[The amendment 1]

[Document to be Amended]Specification

[Item(s) to be Amended]Claim

[Method of Amendment]Change

[Proposed Amendment]

[Claim(s)]

[Claim 1]In a biaxial-stretching-blow-molding container which provided a decompression deformed portion at the time of reduction decompression in said broad height direction approximately central position bottom of a wall among walls which have a chamfer in an intersection of a broad wall and a narrow wall, and were fabricated by cross section abbreviation rectangle,

It has the rib hollowed over said narrow wall and a chamfer of the neighbors,

A biaxial-stretching-blow-molding container, wherein the rib depth of a longitudinal direction center region of said rib is made shallower than the rib depth of the both-ends field.

[Claim 2]In claim 1,

A biaxial-stretching-blow-molding container, wherein a rib of said both-ends field is extended by narrow wall from a chamfer.

[Claim 3]In a biaxial-stretching-blow-molding container which provided a decompression deformed portion which has a chamfer in an intersection of a broad wall and a narrow wall, and has a crevice which carries out decompression modification at the time of reduction decompression among walls fabricated by cross section abbreviation rectangle to said broad height direction approximately central position down side of a wall,

It has the rib hollowed over said narrow wall and a chamfer of the neighbors,

A biaxial-stretching-blow-molding container, wherein the rib depth of a longitudinal direction center region is shallower than the depth of a crevice of said decompression deformed portion and said rib is carried out at least.

[The amendment 2]

[Document to be Amended]Specification

[Item(s) to be Amended]0017

[Method of Amendment]Change

[Proposed Amendment]

[0017]

[Means for Solving the Problem]In order to attain said purpose, the 1st invention has a chamfer in an intersection of a broad wall and a narrow wall, In a biaxial-stretching-blow-molding container which provided a decompression deformed portion at the time of reduction decompression in said broad height direction approximately central position bottom of a wall among walls fabricated by cross section abbreviation rectangle, It has the rib hollowed over said narrow wall and a chamfer of the neighbors, and the rib depth of a longitudinal direction center region of said rib is characterized by being made shallower than the rib depth of the both-ends field.

[Amendment 3]

[Document to be Amended]Specification

[Item(s) to be Amended]0019

[Method of Amendment]Change

[Proposed Amendment]

[0019]The 3rd invention has a chamfer in the intersection of a broad wall and a narrow wall, In the biaxial-stretching-blown-molding container which provided the decompression deformed portion which has a crevice which carries out decompression modification at the time of reduction decompression in said broad height direction approximately central position bottom of the wall among the walls fabricated by the cross section abbreviation rectangle, It has the rib hollowed over said narrow wall and the chamfer of the neighbors, and is characterized by the rib depth of a longitudinal direction center region being shallower than the depth of the crevice of said decompression deformed portion at least, and carrying out said rib.

[Amendment 4]

[Document to be Amended]Specification

[Item(s) to be Amended]0031

[Method of Amendment]Change

[Proposed Amendment]

[0031]The drum section 20 is formed in the cross section abbreviation rectangle which has the broad wall 22 and the narrow wall 24 of the couple arranged in the opposed position, respectively. this drum section 20 -- each -- the chamfer 26 is formed in the broad wall 22 and the intersection of wall 24 narrow comrades over the height direction. This chamfer 26 is formed more narrow than the narrow wall 24, and reinforces the intersection of the broad wall 22 and the narrow wall 24. Namely, since the drum section 20 is more narrow than the wall 24 with the chamfer 26 narrow moreover in which the chamfer 26 is arranged at each intersection of the broad wall 22 and the narrow wall 24, Four intersections of each walls 22 and 24 are in the state where it was reinforced by the chamfer 26 whose intensity is higher than each walls 22 and 24.

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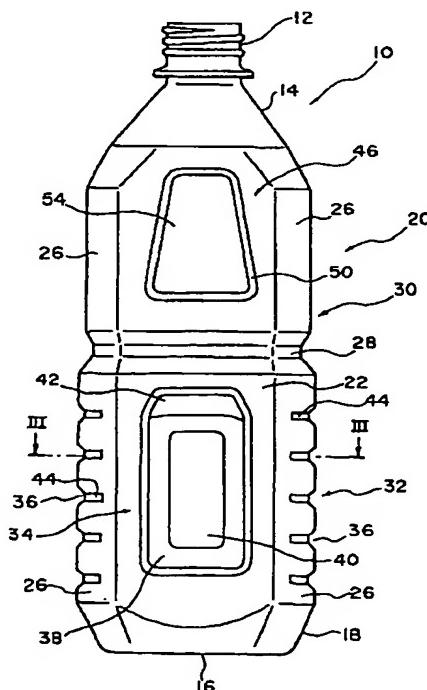
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(54)【発明の名称】二軸延伸ブロー成形容器

(57)【要約】

【目的】 内容物の加熱充填時などに壁面が膨出するのを防止すると共に、減容減圧時に減圧パネル以外の壁面が凹んで形状変形するのを防止することのできる二軸延伸ブロー成形容器を提供する。

【構成】 幅広の壁部22及び幅狭の壁部24の交差部に面取り部26を有し、横断面角形に形成された壁部のうち、幅広の壁部22の高さ方向中央位置下側に減圧変形部34が設けられている。幅狭の壁部24及びその両隣の面取り部26にわたってリブ36が窪ませて設けられている。このリブ36の長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされている。これにより、一定の減圧値を越える減圧変形力が減圧変形部34に加わった場合に、幅狭の壁部24内のリブ36部分を減圧変形させることで、幅広の壁部22の外表面の変形を防止する。



## 【特許請求の範囲】

【請求項1】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【請求項2】 請求項1において、前記両端領域のリブは、面取り部から幅狭の壁部に延長されていることを特徴とする二軸延伸ブロー成形容器。

【請求項3】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、

前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、

前記リブの少なくとも長手方向中央領域のリブ深さが、前記減圧変形部の凹部の深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は、二軸延伸ブロー成形容器に関し、特に、二軸延伸ブロー成形容器の壁面構造に関する。

## 【0002】

【従来の技術】 周知のように、例えば、ポリエチレンテレフタレート(PET)を用いて二軸延伸ブロー成形された容器(以下、ボトルという)は、耐ガスバリヤ性、透明度、強靭性、衛生面等に多くの利点を有する。

【0003】 ところで、二軸延伸ブロー成形によって得られたボトルの一つに、耐熱瓶と称されるものがある。この耐熱瓶は、殺菌のために高温にされたジュース等の内容物を充填することができるボトルである。

【0004】 しかしながら、このようなボトルでは、高温充填された内容物が冷めると内容物の減容により内部が減圧雰囲気となり、ボトル壁部が減圧変形することがある。このような減容減圧による変形はボトル全体の外観形状の変化を招き、ボトルの商品価値を損うことになる。

【0005】 そこで、このような減容減圧が起きた場合の対策として、壁部の一部のみを減容減圧による変形を行なわせて、ボトル全体の外観形状の変形を防止する構造が採用されている。

【0006】 この構造は、減圧パネルと称されるものであって、ボトルの壁部表面にボトル内方に向け窪んだ凹

部を複数設けた構造が通常用いられている。これにより、減容減圧が発生した場合に凹部のみを減圧変形させることでボトルの他の部分での形状変化を防止することができる。

【0007】 一方、上記二軸延伸ブロー成形によって得られるボトルには、デザイン上、一例として長方形の断面形状を有するものがある。なお、この場合の断面は、ボトルの縦方向と直角な方向の断面をいう。

【0008】 そして、このような長方形断面のボトルに10 対しても減圧パネルを設けることが行なわれており、正方形断面の場合には4辺全ての壁面に、また長方形断面の場合には撓み変形しやすい長辺の壁面にそれぞれ減圧パネルが形成されている。

【0009】 この減圧パネルは、一般にボトルの壁部における上下2カ所に形成されるようになっている。

【0010】 また、この種のボトルには、各辺が交差する位置に面取り部が形成されて各辺を連続させたものもある。この面取り部を形成する理由としては、ボトル角部、つまり、壁面をなす各辺の交差する位置の強度を確保することが理由となっている。したがって、このようなボトルの断面形状は八角形とされている。

## 【0011】

【発明が解決しようとする課題】 しかしながら、上記した容器のうち、正方形断面の場合には、ほとんど減容減圧時の減圧変形が各辺の壁面で略均等に行われる所以外観形状の変化が少ないが、特に、長方形断面のように辺の長さが違うボトルの場合には、短い辺の壁面が膨出して外観形状が変化してしまうことがある。

【0012】 すなわち、高温内容物充填時には、液圧と30 壁部の熱変形によって膨出変形し易く、その後の冷却時には、減圧によって壁部はボトル内方へへこみ変形し易い。この場合、幅広壁部の方がへこみ易いので減圧変形部が変形するが、幅狭壁部はなかなかへこみ変形しにくい。したがって、膨出変形してしまうとそのままの状態が保たれてしまうことになる。

【0013】 そこで、幅狭壁部に横リブを形成したら熱充填時の膨出変形は防止された。しかし、この幅狭壁部では全く減圧変形は見込めないため、他の壁部、とりわけ下方に形成された幅広壁部の役割は大きくなる。

【0014】 ところで、熱充填温度が予定よりも高く設定された場合や、運搬中の衝撃等による外力、あるいは、消費者による把持時の圧力による変形が、この負担の多い幅広壁部にかかった場合、幅広壁部の減圧変形部以外の面が変形し、自己復帰できなくなることがあるという問題があった。

【0015】 このような減圧パネル間に位置する壁面の減容減圧時における変形は、特に下側の減圧パネルの上部付近にみられることが多いものであった。

【0016】 本発明は、前述の問題点に着目してなされたもので、その目的は、内容物の加熱充填時などに壁面

が膨出するのを防止すると共に、減容減圧時に減圧パネル以外の壁面が凹んで形状変形するのを防止することのできる二軸延伸ブロー成形容器を提供することにある。

【0017】

【課題を解決するための手段】前記目的を達成するため、第1の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴としている。

【0018】第2の発明は、第1の発明において、前記両端領域のリブは、面取り部から幅狭の壁部に延長されていることを特徴としている。

【0019】第3の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、前記リブの少なくとも長手方向中央領域のリブ深さが、前記減圧変形部の凹部の深さよりも浅くされていることを特徴としている。

【0020】

【作用】前記構成の第1の発明にあっては、内容物の加熱充填時に、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブによって幅狭の壁部が補強された状態となっているため、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部下部側の膨出変形は防止されることとなる。

【0021】特に、リブの長手方向中央領域のリブ深さが両端部のリブ深さよりも浅くされることによって、幅狭の壁部において、一定の減圧値以上の圧力が加わった場合に、その圧力をリブの変形により吸収することが可能となる。

【0022】したがって、壁部の減圧変形力による変形を、減圧変形部内に止めて、商品価値を損わないようになっている。

【0023】第2の発明にあっては、中央領域のリブに比し深くなっている両端領域のリブが面取り部から幅狭の壁部に延長されることにより、この両端領域のリブが幅狭の壁部の両側部を補強することとなり、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止することができる。

【0024】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、面取り部に変形を生じさせることなく、幅狭の

壁部内のリブ部分のみを減圧変形させることができる。

【0025】したがって、壁部の内圧や減圧による変形を、幅狭の壁部内に止めて、商品価値を損わないようにしている。

【0026】第3の発明にあっては、第1の発明の発明と同様に、幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブによって、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止できる。

【0027】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、長手方向中央部領域のリブ深さが減圧変形部の凹部の深さよりも浅くされているため、中央領域のリブが変形して減圧を吸収することができる。

【0028】

【実施例】以下、本発明の好適な実施例について、図面を参照して詳細に説明する。

【0029】図1～図3は、本発明の一実施例に係る二軸延伸ブロー成形容器（以下、ボトルという）の断面図である。

【0030】この実施例に示されているボトル10は、たとえばポリエチレンテレフタレート（P E T）を用いて、二軸延伸ブロー成形により、上端側の開口部を含むリップ部12と、このリップ部12から下方に連なる肩部14と、下端側の底部16と、この底部16から上方に連なるヒール部18と、このヒール部18と肩部14との間に形成された胴部20とが一体に成形されたものとなっている。

【0031】胴部20は、それぞれ対向位置に配置された一対の幅広の壁部22および幅狭の壁部24を有する横断面略角形に形成されている。この胴部20には、各幅広の壁部22および幅狭の壁部24同士の交差部に面取り部26が高さ方向にわたって形成されている。この面取り部26は、幅狭の壁部24よりも幅狭に形成され、幅広の壁部22および幅狭の壁部24の交差部の補強をなすようになっている。すなわち、胴部20は、幅広の壁部22および幅狭の壁部24の各交差部に面取り部26が配置され、しかも面取り部26が幅狭の壁部24よりも幅狭となっているため、各壁部22、24の交差部4カ所が各壁部22、24よりも強度の高い面取り部26によって補強された状態となっている。

【0032】また、胴部20の高さ方向中央位置よりも上方位置に、内方に窪む溝部28が形成されるようになっている。この溝部28は、幅広の壁部22、幅狭の壁部24および面取り部26にわたり周方向に連続して設けられるようになっており、この溝部28を境に、胴部20が上胴部30と、下胴部32とに区分けされるようになっている。このように、溝部28が、胴部20上下方向における途中位置に形成されることにより、胴部2

50

0の上下方向途中位置で胴部20の側圧に対する補強を行うと共に、胴部20を上胴部30および下胴部32の上下方向において小単位に区分けすることにより、胴部20の座屈変形を防止するようになっている。

【0033】さらに、充填された内容物からの液圧を大きく受ける下胴部32には、幅広の壁部22に内容物の減容減圧時に減圧変形可能な減圧変形部34を設けると共に、幅狭の壁部24に内容物の加熱充填時や幅広の壁部22把持時の外側への膨らみを防止するリブ36が設けられるようになっている。

【0034】減圧変形部34は、幅広の壁部22の下胴部32中央部分に縦長の略長方形形状に形成されており、この減圧変形部34内には周囲に前記壁部22の減圧変形部34を除く外表面（以下、一般面と称す）よりも内方に向かって窪む凹部38が環状に連続した状態で形成され、この凹部38に囲まれる中央部分に前記壁部22の一般面よりも若干内方よりに位置する平面部40が凹部38から連続した状態で形成されている。そして、内容物の減容減圧時に、凹部38の外周縁部分をヒンジ支点として平面部40が内方に減圧変形し得るようになっている。

【0035】また、減圧変形部34内の上部位置には、横方向にわたる補強溝42が形成されている。この補強溝42は、減圧変形部34の周囲に形成した凹部38よりも深く内方に向けて窪んだ状態で形成され、補強リブとして機能するもので、減圧変形部34上部の補強を行い、減圧変形部34の上部に連なる壁部22の一般面が減圧変形部34の減圧変形に伴って変形するのを防止するようになっている。また、補強溝42は、減圧変形部34内において、減圧変形部34の凹部38上端位置からその上に連なる壁部22の途中位置まで延設した状態で設けられており、この補強溝42と溝部28との間の壁面の間隔が狭くなるようにしている。したがって、補強溝42と溝部28との間に補強リブが形成された状態となって、リブ効果が高くなり、より一層、減圧変形部34の上部に連なる壁部22の一般面が減圧変形部34の減圧変形に伴って変形するのを確実に防止することが可能となる。さらに、補強溝42の底部と減圧変形部34の上方位置の一般面との間の立上り部43に、補強段部45を設け、立上り部43の補強を行い、凹部38上端が確実にヒンジ支点となるようにしている。

【0036】リブ36は、幅狭の壁部24の高さ方向に所定間隔で複数本（本実施例においては5本）、幅方向全域にわたって設けられており、このリブ36によって、幅狭の壁部24の補強を行うことにより、内容物の加熱充填時や幅広の壁部22の把持時における壁部24の膨出を防止するようになっている。

【0037】また、各リブ36の両端部には、幅狭の壁部24と面取り部26とが交差する角部を越えて両隣の面取り部26にわたって延長された延長部44が設けら

れており、このようにリブ36を両隣の面取り部26まで延長することにより、リブ36の両端部分を、幅狭の壁部24よりも幅狭で曲げ強度の高い面取り部26に支持させることができ、より一層、壁部24の膨出を確実に防止できるようになっている。

【0038】さらに、各リブ36は幅狭の壁部24内にある長手方向中央領域のリブ36の深さD2が、その両端領域に形成された延長部44の深さD1よりも浅く形成され、減圧変形部34に一定の減圧値以上の減圧変形力が加わった場合に、延長部44よりも深さの浅い幅狭の壁部24におけるリブ36部分が減圧変形し得るようにして、幅広の壁部22に設けた減圧変形部34の上部に連なる壁部22の一般面の減圧変形を防止するようしている。

【0039】また、幅狭の壁部24におけるリブ36部分の深さD2は、幅広の壁部22に設けた減圧変形部34内の凹部38の深さD3よりも浅く形成され、減圧変形部34に一定の減圧値以上の減圧変形力が加わった場合に、凹部38よりも深さの浅い幅狭の壁部24におけるリブ36部分が容易に減圧変形し得るようにして、幅広の壁部22に設けた減圧変形部34の上部に連なる壁部22の一般面の減圧変形を防止するようしている。

【0040】さらに、上胴部30の幅広の壁部22および幅狭の壁部24には、それぞれ内容物の減容減圧時に減圧変形し得る減圧変形部46、48が設けられている。幅広の壁部22においては減圧変形部46は大きく形成され、幅狭の壁部24においては減圧変形部48は比較的小さく形成されるようになっている。また、上胴部30においては、下胴部32に比べて面積が小さく、幅広の壁部22および幅狭の壁部24の強度も高いので、減圧変形部46、48は凹部50、52および平面部54、56のみで構成され、補強溝は設けられておらず、しかも、幅狭の壁部24にはリブが設けられていない。

【0041】本実施例は以上のような構成であるから、内容物を加熱充填する際に、胴部20に液圧がかかって、胴部20、特に下胴部32に膨出方向の圧力がかかった場合であっても、リブ36によって下胴部32の幅狭の壁部24が補強されているため、膨出状態となるのは防止される。特に、リブ36は、両端部が強度の高い面取り部26まで延長されて支持された状態となっているため、壁部24の膨出は確実に防止されることとなる。

【0042】また、胴部20の幅広の壁部22を把持して内圧が高くなった場合であっても、前記リブ36の存在により、幅狭の壁部24の膨出が確実に防止されることとなる。

【0043】さらに、加熱充填された内容物が減容減圧した場合であっても、上胴部30の減圧変形部46、48および下胴部32の幅広の壁部22に設けた減圧変形

部34が減圧変形して内容物の減容減圧に対応することとなる。

【0044】この場合、減圧時の下胴部32における減圧変形部34の減圧変形に伴って、減圧変形部34の上部と連なる壁部22の一般面が変形を起こしやすいが、幅狭の壁部24内におけるリブ36の深さD2が両端部に形成された延長部44の深さD1よりも浅く形成され、しかも、幅狭の壁部24におけるリブ36部分の深さD2が、幅広の壁部22に設けた減圧変形部34内の凹部38の深さD3よりも浅く形成されているため、減圧変形部34に一定の減圧値以上の減圧変形力が加わった場合に、幅狭の壁部24におけるリブ36部分が確実に減圧変形して、幅広の壁部22に設けた減圧変形部34の上部に連なる壁部22の一般面の減圧変形を防止することとなる。

【0045】また、減圧変形部34内上部に設けた補強溝42の補強によって前記一般面の変形がより確実に防止されることとなる。特に、補強溝42が減圧変形部34に形成した凹部38よりも深く内方に窪ませられ、かつ、前述の如く減圧変形部34上方に延設されることにより、胴部20に形成した溝部28と補強溝34との間の壁部22の一般面の間隔が狭められて、補強リブとして機能するため、より確実に一般面の変形が防止されることとなる。

【0046】本発明は、前記各実施例に限定されるものではなく、本発明の要旨の範囲内において種々の変形実施が可能である。

【0047】例えば、前記実施例においては、上胴部にリブを形成していないが、上胴部においてはラベル等が貼付されることが多く、このラベル等の貼付に影響のない面取り部等の部分にリブを形成することは可能である。

【0048】また、本実施例においては、幅狭の壁部24内におけるリブ36の深さD2が両端部に形成された延長部44の深さD1よりも浅く形成され、しかも、幅狭の壁部24内におけるリブ36部分の深さD2が、幅広の壁部22に設けた減圧変形部34内の凹部38の深さD3よりも浅く形成されているが、この深さの関係は、幅狭の壁部内におけるリブ部分と、凹部または延長部との関係のいずれかの関係のみとすることも可能である。

【0049】さらに、幅狭の壁部24内におけるリブ36部分の深さのまま延長部44を延長させることも可能である。

【0050】

【発明の効果】以上説明したように第1の発明にあっては、内容物の加熱充填時に、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブによって幅狭の壁部が補強された状態となっているため、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わ

ったとしても、幅狭の壁部下部側の膨出変形は防止されるという効果がある。

【0051】特に、リブの長手方向中央領域のリブ深さが両端部のリブ深さよりも浅くされることによって、幅狭の壁部において、一定の減圧値以上の圧力が加わった場合に、その圧力をリブの変形により吸収することが可能となる。

【0052】したがって、壁部の減圧変形力による変形を、減圧変形部内に止めて、商品価値を損わないようするという効果がある。

【0053】第2の発明によれば、中央領域のリブに比し深くなっている両端領域のリブが面取り部から幅狭の壁部に延長されることにより、この両端領域のリブが幅狭の壁部の両側部を補強することとなり、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止することができるという効果がある。

【0054】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、面取り部に変形を生じさせることなく、幅狭の壁部内のリブ部分のみを減圧変形させることができるという効果がある。

【0055】したがって、壁部の内圧や減圧による変形を、幅狭の壁部内に止めて、商品価値を損わないようするという効果がある。

【0056】第3の発明によれば、第1の発明の発明と同様に、幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブによって、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止できるという効果がある。

【0057】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、長手方向中央部領域のリブ深さが減圧変形部の凹部の深さよりも浅くされているため、中央領域のリブが変形して減圧を吸収することができるという効果がある。

#### 【図面の簡単な説明】

【図1】本発明の一実施例に係る二軸延伸プロー成形容器の幅広の壁部側からみた正面図である。

【図2】図1の幅狭の壁部側からみた部分破断正面図である。

【図3】図1のIII-III線に沿う断面図である。

#### 【符号の説明】

10 ボトル

20 脇部

22 幅広の壁部

24 幅狭の壁部

26 面取り部

28 溝部

(6)

特開平7-329158

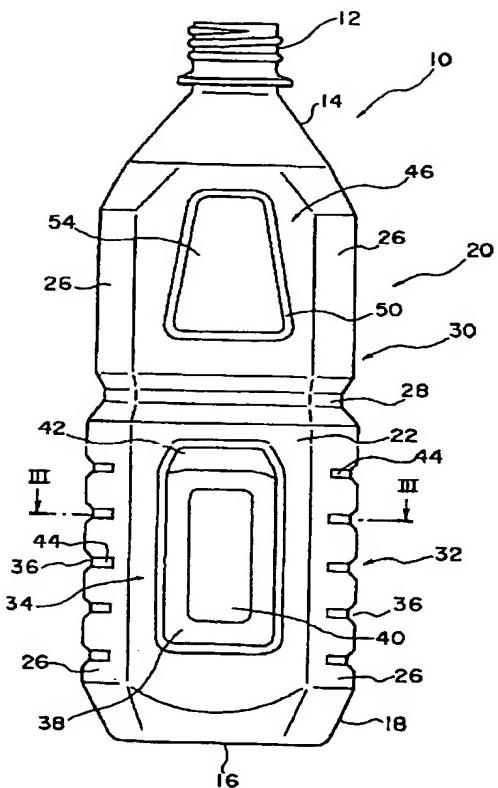
10

30 上胴部  
32 下胴部  
34 減圧変形部  
36 リブ

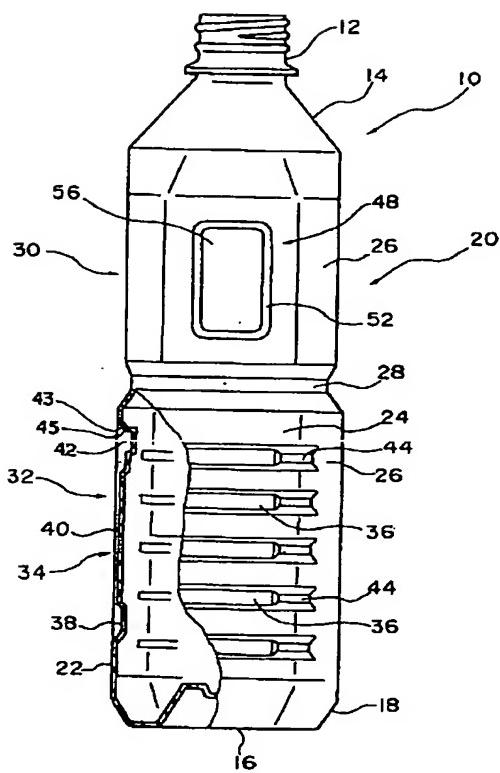
\* 38 凹部  
42 補強溝  
44 延長部  
\*

9

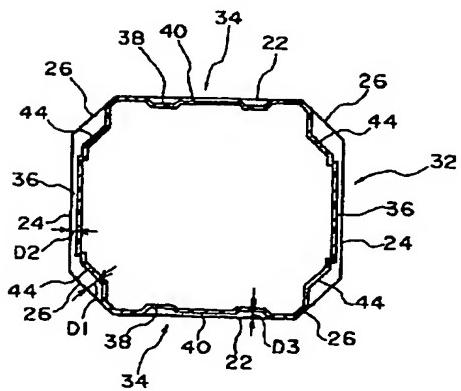
【図1】



【図2】



【図3】



(7)

特開平7-329158

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【手続補正書】

【提出日】平成13年6月6日(2001.6.6)

【手続補正1】

【補正対象書類名】明細書

【補正対象項目名】特許請求の範囲

【補正方法】変更

【補正内容】

【特許請求の範囲】

【請求項1】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【請求項2】 請求項1において、

前記両端領域のリブは、面取り部から幅狭の壁部に延長されていることを特徴とする二軸延伸ブロー成形容器。

【請求項3】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、前記リブの少なくとも長手方向中央領域のリブ深さが、

前記減圧変形部の凹部の深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【手続補正2】

【補正対象書類名】明細書

【補正対象項目名】0017

【補正方法】変更

【補正内容】

【0017】

【課題を解決するための手段】前記目的を達成するため、第1の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴としている。

【手続補正3】

【補正対象書類名】明細書

【補正対象項目名】0019

【補正方法】変更

【補正内容】

【0019】第3の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたりブを

有し、前記リブの少なくとも長手方向中央領域のリブ深さが、前記減圧変形部の凹部の深さよりも浅くされていることを特徴としている。

【手続補正4】

【補正対象書類名】明細書

【補正対象項目名】0031

【補正方法】変更

【補正内容】

【0031】胴部20は、それぞれ対向位置に配置された一対の幅広の壁部22および幅狭の壁部24を有する横断面略長方形に形成されている。この胴部20には、

各幅広の壁部22および幅狭の壁部24同士の交差部に面取り部26が高さ方向にわたって形成されている。この面取り部26は、幅狭の壁部24よりも幅狭に形成され、幅広の壁部22および幅狭の壁部24の交差部の補強をなすようになっている。すなわち、胴部20は、幅広の壁部22および幅狭の壁部24の各交差部に面取り部26が配置され、しかも面取り部26が幅狭の壁部24よりも幅狭となっているため、各壁部22、24の交差部4カ所が各壁部22、24よりも強度の高い面取り部26によって補強された状態となっている。